



Sichuan Electric Power Company - SCADA/EMS

Sector of activity :

Energy Control Systems

Client :

Sichuan Electric Power Company

Year of completion :

2004

Financing :

World Bank

Mandate :

To design, supply, install, and commission a new Energy Management System (SCADA/EMS) for the Sichuan Electric Power Company, which operates the provincial power transmission network in Sichuan province of China. The scope of work included the delivery of all hardware, software, documentation and training for the new system, as well as all necessary testing, field installation and adaptation services.

Description :

Sichuan Electric Power Company operates and maintains the transmission network in Sichuan Province of China. Located in southwest China, Sichuan is one of the largest provinces in the nation, covering an area of 485,000 square kilometres and boasting the largest population in China, with 87 million people. The provincial power network has a total installed capacity of 15,000MW, 62% hydro and 38% thermal. The power network consists of ten 500kV lines, one hundred forty-three 220kV lines, two 500kV substations, and fifty-six 220kV substations.

The SCADA/EMS is installed in Chengdu, capital city of the Sichuan province, and is used to monitor and control the Sichuan province power transmission network. The system

includes Supervisory Control and Data Acquisition (SCADA) applications, Generation Management (GMS) applications, Network Analysis and Security (NAS) applications, Operations Planning and Scheduling (OPS) applications, Dispatcher Training Simulator (DTS), and Real Time Power Market Analysis applications.

The SCADA/EMS is based on a distributed client/server architecture designed to internationally recognized standards. Commercial off-the-shelf equipment is used throughout the system, which provides simplified maintenance and easier system expansion. The system is fully redundant to ensure high availability, and provides automatic fail-over features.

The SCADA/EMS software is based on the GEN-4 product developed by SNC-Lavalin Energy Control Systems, and uses the Oracle RDBMS for database management, historical data storage, and reporting. The system includes 160 redundant serial channels supporting the IEC-60870-5-10 protocol, SC-1801 protocol, and CDT protocol for communicating with remote terminal units. The system also includes the DL-476-92 protocol and ICCP TASE.2 protocol for communicating with other control centres. The EMS applications

are fully integrated with Nexant PCA Powersuite, and the user interface supports Chinese character entry and display capabilities.

The real-time power market applications include Super Short-term Load Forecasting, Real-time Dispatch Scheduling, Marginal Price Forecasting, Security Evaluation and Congestion Management. These real-time power market applications meet the real-time transaction requirements of the electricity market both on the generation side and the transmission side.

The SCADA/EMS provides valuable tools to assist the operators in operating the power system to high performance standards, in particular, network security. Customer training consisted of formal classroom training and on-the-job training (OJT) for operating and maintaining the SCADA/EMS.

Services provided :

Turn-key system including hardware and software design, code, integration, test, installation, commissioning, training and documentation.



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